THE METEORITE

A Venus Transit

June 8, 2004

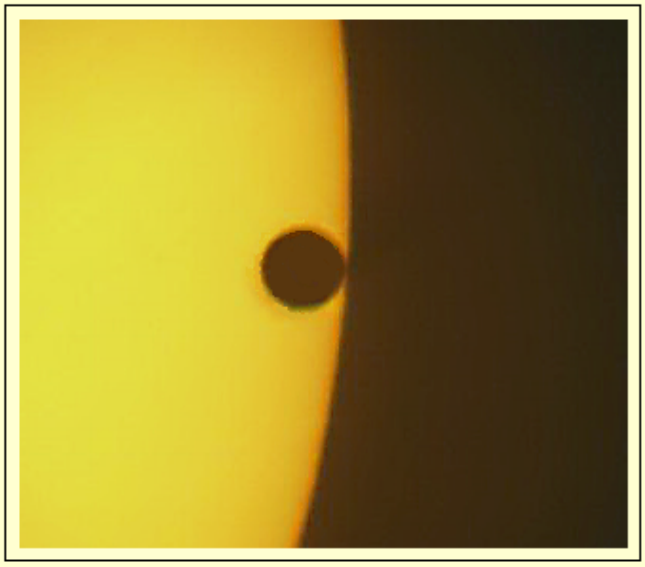


Photo by Tony Mehle: 12" SCT, from New Jersey

Newsletter of the Mahoning Valley Astronomical Society, Inc.

IN THIS ISSUE:

APRIL 2012

Meteorite Editor: Phil Plante
1982 Mathews Rd. #2
Youngstown OH 44514

THE METEORITE

Newsletter of the Mahoning Valley Astronomical Society, Inc.

APRIL 2012

MVAS CALENDAR

APR 21 Chili Fest- Galaxy Quest. 6:30 PM start.

APR 28 Business meeting at the MVCO 8:00 PM. Imaging Seminar to begin after the meeting.

MAY 19 OTAA-Stargaze at Scenic Vista. 3:00 PM

MAY 26 **Business meeting at the MVCO.** 8:00 PM start. Memorial Day BBQ is planned for after the meeting.

NATIONAL & REGIONAL EVENTS

JUN 14-17 **Cherry Springs Star Party**, at Cherry Springs Park, PA. Individual is $40, Family is $55. http://www.astrohbg.org/CSSP/Information.html

JUN 20-23 **Green Bank Star Quest,** held at Green Bank, WV. Optical and Radio Astronomy meeting. Registration is $85 per person. Campsite included. http://www.greenbankstarquest.org/

JUN 21-24 **Sky Tour.** Located in Bellevue, OH. It's The Huron Valley Astronomer Group's 12th annual star party. http://nwo-astronomy.org Admission: $20, $25, $30

OTAA CONVENTIONS IN 2012 (so far)

MAY 19 **OTAA Stargaze** (MVAS) at Scenic Vista-Lisbon, OH

JUN ?? **CVAS-OTAA** no information available at this time.

JUL 21 **CAA-OTAA** at Letha House, Spencer, OH

AUG 18 **MVAS-OTAA** at the MVCO, Braceville, OH

SEP 15 **BRAS-OTAA,** Wakeman, OH (tentative date)

MVAS, P.O. BOX 564 NEWTON FALLS, OH 44444-9998
MVAS Homepage- http://mvobservatory.com

NEWS NOTES

Big Blast for Big Bang. On March 23rd, 2012, workers began to blast 3 million cubic feet of rock from a mountaintop in the Chilean Andes to make room for what will be the world's largest telescope. It is expected to be completed near the end of the decade. The Giant Magellan Telescope (GMT) will have unprecedented capabilities, allowing it to peer back to the dawn of time-almost the Big Bang. It will look for the birth of the first stars, galaxies and black holes. It will also explore planetary systems around nearby stars. The GMT will help astronomers probe the nature of dark matter and dark energy, mysterious forms of matter and energy that allow galaxies to form while the expansion of the universe accelerates. The telescope will be located at the Carnegie Institution's Las Campanas Observatory; one of the world's premier astronomical sites.

The Giant Magellan Telescope is being built by a consortium of U.S., South Korean and Australian institutions with funding from both private and public sources. To date 40% of the telescope's ultimate $700M price tag has been committed and active fundraising is underway to secure the remaining funds. In January of this year, the partners cast the second of GMT's seven 28-foot diameter primary mirror segments at the University of Arizona's Steward Observatory Mirror Laboratory. The seven primary mirrors, each weighing 20 tons, are the heart of the giant telescope, providing nearly 4,000 square feet of light-gathering area. Optical scientists at the Mirror Lab are putting the finishing touches on the first mirror segment, whose surface now matches its optical prescription to better than one millionth of an inch. - *Adapted from Space News Daily.*

Earth's by the billions. A new result from ESO's HARPS planet finder shows that rocky planets not much bigger than Earth are very common in the habitable zones around red dwarf stars. The first direct estimate of the number of light planets around red dwarfs has been announced by an international team using observations with the HARPS spectrograph on the 3.6-meter telescope at ESO's La Silla Observatory in Chile. The HARPS team has been searching for exoplanets orbiting red dwarf stars. These stars are faint and cool compared to the Sun, but very common and long-lived. They account for nearly 80% of all the stars in the Milky Way.

These new observations with HARPS mean that about 40% of all red dwarf stars have a super-Earth orbiting in the habitable zone where liquid water can exist on the surface of the planet, states Xavier Bonfils (IPAG, Observatoire des Sciences de l'Univers de Grenoble, France), the leader of the team. There are about 160 billion red dwarfs in the Milky Way. - indicating that there are tens of billions of these planets in our galaxy. The HARPS team surveyed a carefully chosen sample of 102 red dwarf stars in the southern skies over a six-year period. A total of nine super-Earths (planets with masses between one and ten times that of Earth) were found.

As there are many red dwarf stars close to the Sun. The new estimate indicates there are perhaps 100 super-Earth's in habitable zones, around stars within a 30 light-year radius from the Sun. Red dwarfs are known to be subject to stellar eruptions or flares, which may bathe the planet in X-rays or ultraviolet radiation. This may make life there less likely to form.

- *Adapted from Space News Daily.*

MINUTES OF THE MARCH MEETING

MARCH 31, 2012 at YSU

Sharon Shanks used the All Sky dome projector to start the evening's program with a sky tour. With a full house this night, we next watched the show "Stars" which had lively cartoon characters. Sharon finished with an in-depth star hop, asterism hunt, using the Goto Star Projector. Great job as always!

The meeting came to order at 9:23PM with Sam DiRocco presiding. All officers were present. Roll Call showed twenty-three members present, along with seven guests. These included Alan & Jane Avnet, Kristin Kalna, Chuck & Carol Oiesen and regular MVAS family- Lisa and Isaac Boyer. Kristin, Carol and Chuck expressed interest in membership. A Call for the Reading of the Minutes was made. Larry Plante moved to suspend the reading and accept them as published. Dan Schneider seconded the motion. With no further discussion brought forth, the motion passed by a voice vote.

TREASURER'S REPORT: The Report was read by Steve Bartos. No questions or discussion followed. Bob Danko moved to accept the report as read. Larry seconded this motion. By a unanimous voice vote, the Report (below) was accepted.

General Fund	**2/1 thru 2/29 2012**
OPENING BALANCE:	$ 7,327.18
CLOSING BALANCE:	$ 8,197.47
AVAILABLE FUNDS (NON-RESERVED):	$ 4,033.35
ACCOUNT NET GAIN/LOSS FOR THIS PERIOD:	$ +870.29
INCOME:	
DUES	$ 470.00
RASC HANDBOOKS	100.00
ASTRONOMY MAGAZINE RENEWAL	34.00
SKY & TELESCOPE RENEWAL	32.95
DONATIONS (D. DURBIN $100, Dr. W. YOUNG $200)	300.00
INTEREST	0.29
TOTAL INCOME	$ 937.24
EXPENSES:	
CK# 2773 ASTRONOMY & S&T RENEWALS	$ 66.95
TOTAL EXPENSES	$ 66.95
Reserved Funds	
KEY DEPOSITS (MVCO)	$ 250.00
CASH FROM ORIGINAL OAD FUND (FOR LAND)	3,914.12
TOTAL RESERVED FUNDS	**$ 4,164.12**

2012 MVAS dues paid, as reported in February 2012:

Blevin, DiRocco, Durbin, Eaken, Iliff C., Iliff D., klesch D, Klesch E., Mattuissi, Plante L., Prewitt, Thomas III. Thank you one and all! We still have 9 members in arrears.

CORRESPONDENCE: No mail at the P.O. Box. When asked if he had been reimbursed for the expense, Bob Danko said that he donated the post office box fee. Thank you Bob!

COMMITTEE/OFFICER REPORTS: COMMITTEE/OFFICER REPORTS: *IMAGING COMMITTEE:* Jodi McCullough noted the imaging classes that will begin at the MVCO (more on this later). She noted that the goal of imaging the Messier list had been hampered by clouds in 2011. *VISUAL COMMITTEE:* Few reports were turned in in 2011. Phil has a new report form to use, with "homework" style planet outlines on the back and a circle for deep sky sketching. *LIBRARIAN:* No report.

OBSERVATORY DIRECTOR'S REPORT: Larry Plante has fixed the switches in the outhouse. He asked if we need a receptacle on the women's side. For heaters, yes. Larry was given the okay to install an outlet; should be easy enough. A new receptacle at the deck is needed. No power comes out but it goes into the outlet box. Rust and spider webs inside appear to have ruined the current outlet. He noted we are waiting on cost estimates in fixing the 16" roof. Dan Schneider reported that the 12" door is getting bad at the bottom as well as a corner wall panel. Both are water damaged. Aside from these problems, everything else seemed in working order.

OLD BUSINESS: The problem with the dome leak was discussed next. Several members inspected the dome prior to the BinoBlast on March 24th. They found that a space between the roof and the dome's base was the origin of water seeping under the roof surface. This water eventually formed a fist -size hole in one of the particle board roof panels. The water ends up in the dome and on the stage in this way. It was thought that repairs could be done by members. But the rubber roofing membrane is only six years old. Rather than voiding any warranty on the membrane, it was decided to call in the installers to get an estimate on repairing the wood panels underneath it. Another local contractor will be asked for a price quote. Dennis Marko offered to have the roofers that just did his house give an estimate as well.

Several remedies were described such a metal flashing around the dome to divert water away from the roof-dome boundary. A rubber strip was also suggested. Rosemary noted that we should let the roofers decide on how to fix the problem. It was also suggested we have the same contractor investigate the 12" building wall that is water damaged.

The imaging workshops at the MVCO start at the April meeting. How this would be pulled-off was discussed. Previous conversations on this topic had the food moved to tables in the 8" building, while the talks were presented in the 16" building. This would allow use of the monitor and computer for power point and other demonstrations. In the past, there would be disruptions in the programs from social hour activity (eats) taking place in the background. Jodi says that the first class will be about imaging the Venus Transit as it is drawing closer. Talks will be about 15 minutes to 30 minutes long. The "food move" seemed to be well received and is officially adopted. It was decided to have 50/50 raffle at the Chili-fest on April 21st. Phil will donate a new *Herschel Object Atlas* (Tirion) as a prize. To win the Atlas, only those that bring chili will be entered into a raffle. This will eliminate having to judge the best brew.

The Bopp Photo Album is on hold as the person that handles this was on vacation (at Kinko's). Rosemary noted many grills on sale lately. We need a new one so keep an eye out for a good deal in the $150 - $170 range. A reminder that all members needed to be paid up by this day. If not your name is dropped from the roster. You will need to ask for re-instatement if you choose to remain in the MVAS. Nothing has been done regarding the 50" mirror. None of the options available at present time are viable and would likely involve building a crate and MVAS shipping it. Having the mirror lab in Arizona melt the 50" for a smaller mirror may amount to a give-away with the above MVAS labor and costs involved- offsetting any gain.

NEW BUSINESS: New Visual Committee forms were taken by several members. A PDF file of this form will be posted on the MVAS website, for downloading and printing. Plans for the Venus Transit have the MVAS and Planetarium staff at the Experimental Farm in Canfield. Pat Durrell said they will have one h-alpha and one white light scope on hand. Sharon has

contacted Mill Creek and it appears the Farm will be available. YSU has ordered 1,000 solar filter glasses for the public. YSU will handle promotion of the event. MVAS members are encouraged to observe with the team and provide the extra scopes that will be needed. Jodi suggested the MVAS or a group of members obtain some Baader solar filter material to make filters for member's scopes and binoculars. A few were interested in doing this. Dennis will be using a #14 welder's glass. Pat says set-up at the Canfield spot should begin around 5PM since the transit starts at 6:04PM. Rich Mattiussi will need help with a scout troupe that Dominic just joined. They need to earn their astronomy badges. Scenic Vista or more likely a place in Austintown will be used. Stay tuned for place, and date.

Kristin Kalna was nominated by Sam for membership, Dan seconded it. All in favor. Next Chuck and Carol Oiesen were nominated by Jodi. Pat seconded it. All were in favor. Welcome to the MVAS. We hope you enjoy our company as we will yours.

GOOD OF THE SOCIETY: Rosemary suggested a special shirt for the 75th anniversary be selected from designs offered by the membership. A vote would be taken. Dan noted that using a smart phone planetarium app might work as a handy "push-to" aid device when aiming the 16" scope.

VISUAL REPORTS: Phil got 25 vso's and a ton of homework done during this mild March. Bob thinks that Comet Garradd has seen its best days and will be gone by the time the Galaxy Quest gets here, on April 21st. A full moon won't help either.

ADJOURNMENT: Adjournment came at 10:16PM. We thank our gracious hosts Ed and Sheila Bishop for the sandwiches and soft drinks. The next meeting will be at the MVCO on April 28, 2012. Meeting begins at 8:00 PM. Scheduled hosts are Keith Janeco and Larry Plante. PASSWORD: Give a galaxy that has a proper or common name. *-minutes by Phil Plante*

MVAS REMINDERS

We have the annual chili-fest (used to be cook-off) on April 21st. Starts around 6:30 PM. Bring your favorite brew- basic, mild, hot or atomic. If you bring a pot-o-chili you will be entered in the drawing for the *Herschel Object Atlas*. It's also a good general purpose star atlas. There will be a regular 50/50 raffle for all attendees. Later if skies allow, we will have a Galaxy Quest until…?? Bring your scopes too. Remember we are doing Markarian's Chain in Virgo. It should be up in the NE sky by 10:00 PM and your belly should be full by then.

MVAS ACTIVITIES

BinoBlast 2012: On March 24th, about 16 members ended up at the MVCO for the binocular marathon, under cloudy skies. Thus it was planned to have the usual food fest and good cheer. Thanks to all that brought food and drink. Pandian had his famous chicken- unusually huge drumsticks! Many brought their binoculars just in case. After filling-up on the great chow, a clearing formed in the cloud deck. In no time a dozen or so were elbow to elbow on the deck, scanning the heavens with their binoculars. The good cheer was clearly heard as we feasted on Venus, M-objects and a jet contrail that looked like a laser pointer. We only had about about 40 minutes of observing, but it was great. It was at this time that the name "BinoBlast" was bandied-about. A new event for the MVAS? It'll be easy enough to schedule it for 2013. Let's think Galaxies for now……

Observer's Notes.....

VENUS TRANSIT 2012

On Tuesday afternoon, June 5, 2012 Venus will transit the Sun's disk. This is the last Venus Transit until 2117. It will not be spectacular by any means. In fact, you wouldn't even know that it was happening if you didn't know about it. Venus will appear as a tiny black dot that is very hard to see with the naked eye. It hides in the Sun's glare to boot; and no one stares at the Sun-right? Solar filters or eclipse glasses are needed for this one. Use a proper solar filter securely attached to the front of your scope. You could also hold this filter in your hand, viewing the Sun through it, for a naked eye try. If you don't have a solar filter, get low cost eclipse glasses for the family (or as needed). If you don't have a scope, a set of solar filters for your binoculars is an option, but they are expensive. Binoculars should magnify enough to let you easily see Venus against the solar disk. There are many filter options out there. But place an order pretty soon. This will allow for "out of stock" problems and it allows a few weeks time to practice solar observing. Check the various vendors on line.

Those with cell phone cameras with zoom or camcorders (they usually zoom) can take advantage of those filter glasses. Find a way to safely mount your phone to a tripod. Tape or rubber-band the filter over the recorder's lens. Aim it at the Sun and zoom in until you get a decent size disk. If possible, adjust the exposure to get a proper image. The snapshot or video should show sunspots that are out when you practice. Use these sunspots or Venus for manual focus-- if this is possible. Most "snapshot" devices are all auto-focus or preset. In any case, the edge of the Sun could be a bit too soft to focus on. Practice all of this a few weeks before the transit.

This transit starts at 6:04 PM EDT and will be low in the western sky, 29° high and just north of due west at the MVCO. You will need an observing spot with a clear view of the western horizon. Unfortunately the MVCO has a high tree line to the west. Ranging from 22° to 16° high, trees block the western view. The tallest tree happens to sit in the direction of the sun. The 8" refractor is the only MVCO scope with a solar filter readily available, but it suffers the most tree blockage. A personal scope set-up somewhere between the deck and outhouse might give a half-hour view before the hill blocks the view. This is your option to try, but don't wait until transit day to find the spot! Current plans call for the MVAS and some YSU folks to observe in Canfield, OH. There is a good western horizon from there. Please consider joining the MVAS team. Remember, the Sun will set with the transit in progress from everywhere in North America. Hawaii offers a first chance to see the whole thing, beginning to end, from the USA.

WEATHER? The main problem is always the weather. Here in Ohio, a June afternoon takes place in prime thunderstorm season. If skies look to be bad at Transit time, you'll have to decide: make a dash to clear skies, watch a webcast, or just miss it altogether. For a play-it-by ear "bug-out", you'll need travel logistics worked out well in advance (equipment to bring, maps, travel time allowance, distance willing to go, etc.) Some may opt for an expedition, taking several days to go to a pre-determined location. The travel route or destination might have other attractions to make it a worthwhile trip. The tables below show circumstances for a few Ohio cities and other cities. The 6yr. cloud data is a guide for selecting a destination with a good

history of clear skies. The best plan for last minute travel locally will be based on weather predictions given Sunday afternoon. These should be good to go on. Check for Tuesday afternoon's weather as well as Wednesday's. Look for general trends; weather systems usually move in from the west. If there's a large clear area out west, check where it's moving to. Determine where it will be at transit time. If not over Ohio, then check the Weather Underground http://www.wunderground.com/for or another weather service forecast, for a city that may end up in the clear. Don't be surprised if the entire eastern US is socked-in. Have your vehicle loaded and fueled by Monday evening. Allow for travel delays and finding an observing spot (you're on your own here- but parks and a hotel parking lot might work). Last minute dashes sometimes work, but why risk it- hast makes waste. Prepare. Do some homework on the internet.

I've mainly listed conditions to the west but other directions are always in play. The "west only" data set is based on a travel plan of driving due west. By driving "into the Sun" we gain the maximum solar altitude and transit duration for mile traveled. Cloud conditions near 6:00 PM local time are given in Table 2, for various cites. The data shows that when going due west, there is little improvement on average. But weather is weather and the six year trends might not reflect what happens on Transit Day. Things seem to improve as you get into the Great Plains and a bit better to the southwest. Records show that Akron and central Ohio have had better skies at this time of day. This is promising for a morning drive to a spot in Ohio.

Distant spots. The Denver area seems to be plagued by afternoon clouds, most likely off the Rockies. Kansas City shows promise as does Los Angeles and Las Vegas. In fact Vegas could be a nice vacation trip with good transit viewing prospects in the cards. If you're going to gamble on the weather, you might as well gamble in Vegas. (sorry, no puns intended) The Orlando, FL area seems to have the best record, but there were scattered clouds around before or after the 6:00PM time-on some dates. Disney could be a second reason for a trip. Some are headed to Hawaii to catch the end of the transit. From the Waikoloa area on the Big Island, it's usually clear at the 12:10PM start time. This area has the driest and sunniest climate in the islands - less than 20" rain per year. Cloudy afternoons sometime sport a clearing over Waikoloa. There is a reason why they built the high end resorts there.

For those thinking about observing from Mauna Kea, heed the following. At press time, astronomers in Kona indicate that access to the summit will be cut-off at the Visitor Center (9,000ft) to all private vehicles. There are plans to have shuttles from the VIS to the summit (costs not mentioned). Viewing is possible from the VIS but the transit end is blocked by hills. A live video feed to the VIS from the summit is planned as well as a webcast. Expect crowds on the mountain. Arrive early with your own supplies. The summit has no water, or food vendors. The few porta-lets will eventually become "bio-hazards". Altitude sickness does happen- with medical evac needed. It will be cold and windy. If needed when getting to or leaving the VIS, tow trucks are limited in number; costs usually around $1,200 for a call. A Waikoloa/Kohala shoreline may be a "best option". If you really need Mauna Kea, find a tour that still has openings.

Remember, thin clouds will allow you to see the transit, but not the best view. Partly cloudy or scattered clouds may allow views through passing openings. Taking what you get at home might be the sanest plan. But some like the adventure of an expedition. If you miss this one, a healthy life-style might let you live 105 years to see the next one. But Wheaties and Vitamin C might not do the trick. And who gets enough sleep, anyway?

TABLE 1: Transit circumstances at start. (Topocentric)

Location/ City	STATION Long.	Lat.	Elev.	Local Time PM	Sun alt.	Sun azm.
Edison, NJ	74.4°	40.4°	121ft	6:03:50	24°	280°
Orlando, FL	81.4	28.5	151ft	6:04:29	27	282
MVCO	80.9	41.2	1,000ft	6:04:04	29	275
Canfield	80.5	41.0	1,155ft	6:04:04	29	276
Akron	81.5	41.0	1,033ft	6:04:06	30	258
Columbus	83.0	40.1	889ft	6:04:11	30	275
Cincinnati	84.5	39.1	768ft	6:04:17	31	275
Indianapolis	86.1	38.8	781ft	6:04:21	33	274
Kansas City	94.6	39.1	755ft	5:04:47	39	268
Denver	105.0	39.7	5,249ft	4:05:21	47	261
Albuqueque	106.6	35.2	4,997ft	4:05:38	49	265
Las Vegas	115.1	36.0	2,362ft	3:06:08	55	257
Los Angeles	118.2	34.0	164ft	3:06:27	58	258
Waikoloa	155.8	19.8	920ft	12:10:08	86	043

About 18 minutes after first contact look for the black drop effect as the trailing edge of Venus touches and and then leaves the Sun's limb, heading to the interior transit path. Data computed with MICA software.

TABLE 2: Cloud conditions at 6:00PM local time. 6 yr. history.

Location/ City	Duration of Transit	Sky Conditions at 6:00 PM, by year '11	'10	'09	'08	'07	'06
Edison, NJ	2:24:46	Clr	Clr	LR	OC	MC	PC
Orlando, FL	2:20:26	Clr	Clr	Clr	Clr	Clr	PC
MVCO	2:53:28	SC	OC	SC	OC	OC	SC
Canfield	2:51:51	SC	OC	SC	OC	OC	SC
Akron	2:54:58	Clr	MC	MC	Clr	LR	Clr
Columbus	2:57:55	PC	Clr	Clr	Clr	MC	PC
Cincinnati	3:00:49	PC	Clr	Clr	SC	MC	MC
Indianapolis	3:05:22	OC	MC	PC	MC	MC	SC
Kansas City	3:39:49	Clr	MC	PC	OC	Clr	SC
Denver	4:24:13	SC	MC	SC	MC	MC	MC
Albuqueque	4:16:29	Dust	PC	OC	SC	OC	PC
Las Vegas	4:51:40	Clr	Clr	PC	Clr	Dust	SC
Los Angeles	4:58:38	OC	Clr	Clr	Clr	OC	Clr
Waikoloa	6:34:19	OC	PC	OC	Clr	OC	SC

Data obtained from Weather Underground. LR=light rain, OC=overcast, PC=partly cloudy, SC=scattered clouds, MC=mostly cloudy, Clr=clear

6:00PM local time was chosen because it is near the start as seen in the Eastern Time zone. I stuck with 6PM local time in other time zones since this is also late afternoon weather for these places. The transit will already be in progress at 6PM for more western time zones. Weather Underground can be checked for statistical and cloud data for earlier or later times of day. Enter a city, then scroll down to find the archives.

Transit Tool Box: data and supplies.

Weather Underground: Weather data and forecasts. http://www.wunderground.com/for

Thousand Oaks: glass & polymer filters, filter sheets and eclipse viewers. http://thousandoaksoptical.com/solar.html

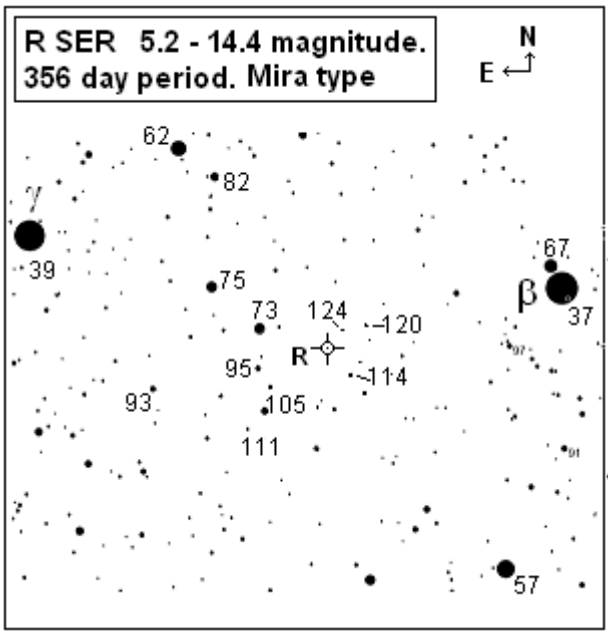
Rainbow Symphony: eclipse glasses, limited solar filter sizes. http://www.rainbowsymphonystore.com/solar-filters.html

Kenrick Astro Systems: Baader filters and sheets, eclipse glasses. http://www.kendrickastro.com/astro/solarfilters.html

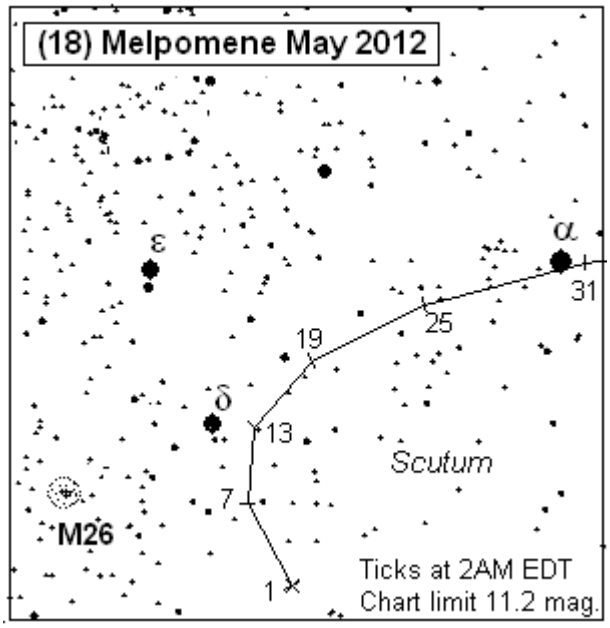
NASA general information on the 2012 Venus Transit. http://eclipse.gsfc.nasa.gov/OH/transit12.html

MVAS OBSERVER CHARTS

Variable of the month: **R Serpens** (*abbrev:* R Ser). Look for the triangle formed by β, γ and κ Ser. Midway between the base stars γ and β you'll find R Ser. It's on the rise to a late August maximum of magnitude 6.9. As April begins, AAVSO observers have it coming out of minimum and near 12th magnitude. Use a scope for now; but how soon can you spot it in your binoculars? It should gain a few magnitudes in a little over a month



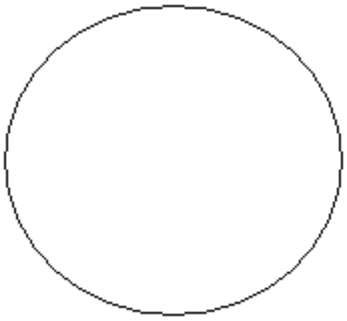
Asteroid of the month: (**18) Melpomene.** Around 2 am during April, look to the SE for Scutum. There you'll find 18 Melpomene cruising north, past M26 and δ Sct. Then west towards α Sct. It starts off at 10.6 magnitude and rises to 9.9 by the end of May. A small scope should work fine for this one. City lights could make it difficult. Tip: Scutum will be constellation of the month in the May Meteorite. M-11 the featured object. Get a jump on Homework? Use the new Visual Committee Forms!



MVAS OBSERVATIONS - DUE MAY 2012

OBSERVER_____

Featured object: M-5. This globular cluster is often overlooked, but it is a fine one. At 5.6mag. it can be glimpsed by the naked eye under ideal conditions. Easily visible in binoculars under similar skies. Use a telescope to sketch it below. The circle is the field of view. Draw-in the bright stars, then smudge-in the background glow of the cluster stars you can't resolve. In April, it transits around 3:00AM. Earlier as May gets closer.



M-5 Observation:

Date:_____ Time(EDT)_____ Scope_____

R Ser magnitude estimates:

Date:	Time:	estimate:	Instrument:
_____	_____	_____	_____
_____	_____	_____	_____

(18) Melpomene Observations:

Date:	Time:	Instrument:	magnification:
_____	_____	_____	_____
_____	_____	_____	_____

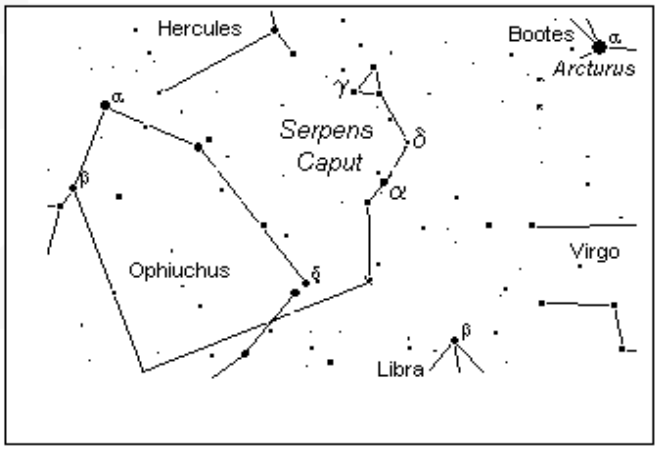
Other Objects in Serpens to observe

D. Sky	Date	Scope	**Dbl.**	Date	Scope	SEP	MAG	SPLIT?
N- 5921	_____	_____	δ Ser	_____	____	4.0"	4.2 - 5.2	Y / N
N- 5962	_____	_____	β 32	_____	____	3.0"	5.5 - 8.8	Y / N
N- 5970	_____	_____	Σ 2007	_____	____	38"	6.9 - 8.0	Y / N

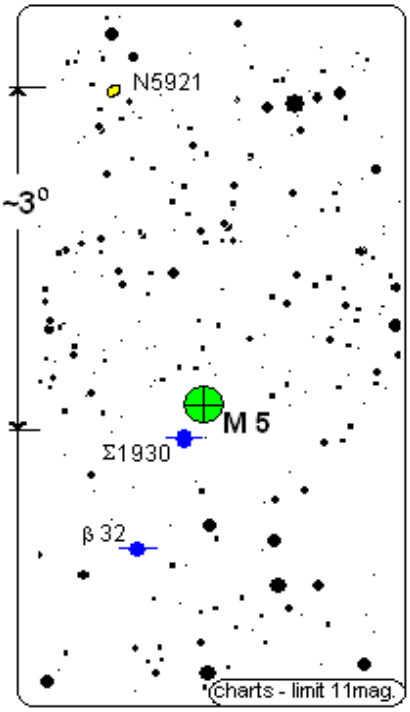
Lunar Occultations (see Sky Almanac):

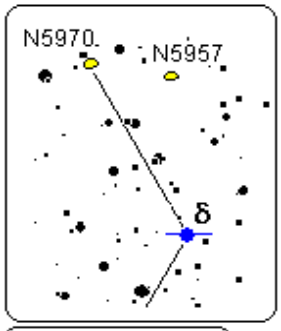
Star	(UT) Date	Time	Scope	magx.	Event(circle)
_____	_____	_____	_____	_____x	R D
_____	_____	_____	_____	_____x	R D
_____	_____	_____	_____	_____x	R D

Constellation of the Month — Serpens Caput



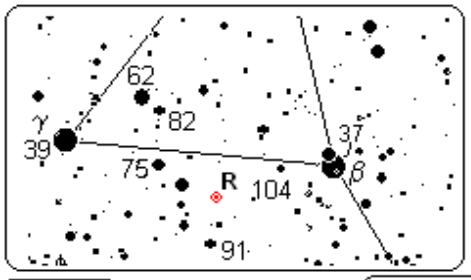
Serpens represents the serpent being handled by Ohpiuchus, the Serpent Handler. Serpens Cauda is the eastern half (the tail) while Serpens Caput is the western half (head). It's the only constellation split in half. We look at Caput this time. It hosts one of the best globulars in M5. It's nice in binoculars and gets better with larger scopes. There are a handful of faint galaxies for light buckets to tackle under darker skies. Plenty of colorful double stars will delight small scope users. Separations are moderate and should fare well in refractors at medium to high magnification. Other scopes work fine too! A faint planetary in Hercules is added for good measure (NGC4593). Variable star R Ser should be visible when at maximum using binoculars. Serpens represents the transition from Springtime galaxies and double stars, to Summer's globulars and nebula. Stop by for a spell!



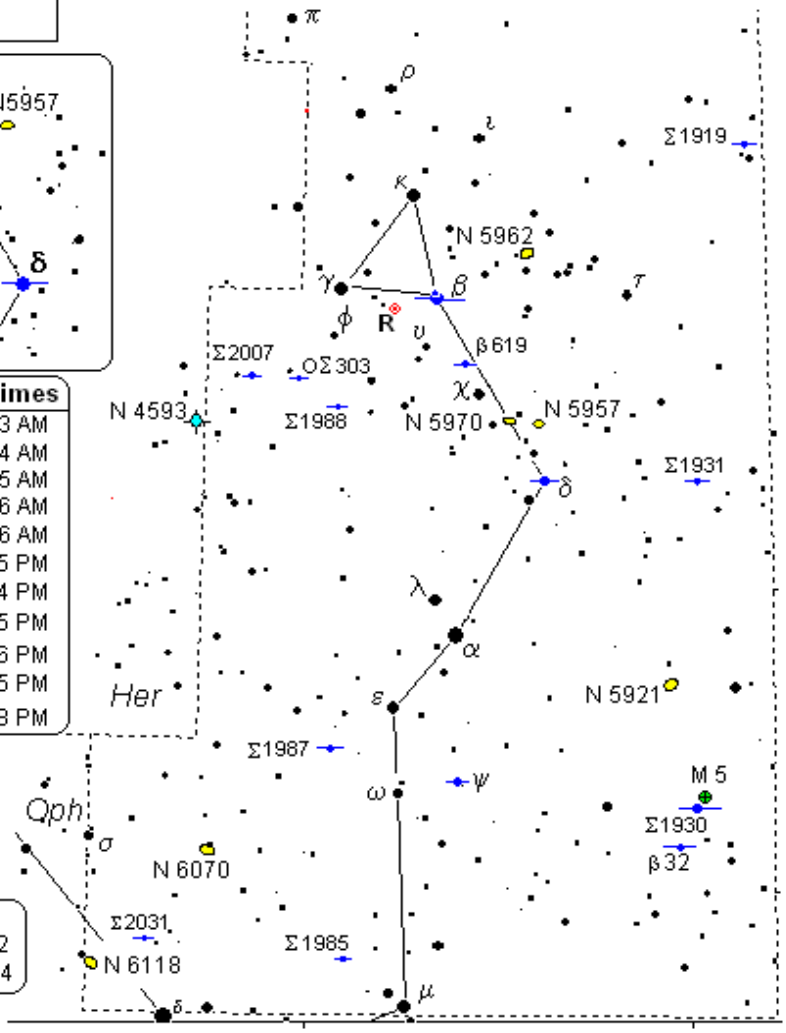


M-5 Transit Times

Apr	1	4:03 AM
Apr	16	3:04 AM
May	1	2:05 AM
May	16	1:06 AM
Jun	1	12:06 AM
Jun	16	11:05 PM
Jul	1	10:04 PM
Jul	16	9:05 PM
Aug	1	8:06 PM
Aug	16	7:05 PM
Sep	1	6:08 PM



R Ser
max= 5.2
min=14.4



DEEP SKY

N6118	12.4 mag.	4.7' x 2.0'	Gal
N6070	12.5	3.5' x 1.8'	Gal
N5970	12.2	2.9' x 1.9'	Gal
N5957	12.5	2.8' x 2.6'	Gal
N5962	12.0	2.9' x 2.0'	Gal
N5921	11.5	4.9' x 3.9'	Gal
M 5	5.7	22'	GC
N4593	10.9	13'	PN

Variable Star

R Ser 5.2 - 14.4 356 day period

DOUBLE STARS

Σ1919	6.7, 7.4	23.1"	peach, red
Σ1931	7.2, 8.1	13.2"	both yellow
Σ1985	7.0, 8.7	6.0"	yellow, ash
Σ1987	7.3, 8.7	10.9"	white, lilac
Σ1988	7.6, 7.8	1.9"	both amber
Σ 2007	6.9, 8.0	37.8"	yellow, red
Σ2031	7.2, 8.7	19.8"	orange, grey
β 32	5.5, 8.8	3.0"	yellow, grey
β Ser	3.7, 10.0	30.9"	yellow, lilac
ψ Ser	6.0, 9.2	195"	yellow (optical)
δ Ser	4.2, 5.2	4.0"	both blue-white

Check list

N6118 ____
N6070 ____
N5970 ____
N5957 ____
N5962 ____
N5921 ____
M 5 ____
N4593 ____
Σ1919 ____
Σ1931 ____
Σ1985 ____
Σ1987 ____
Σ1988 ____
Σ 2007 ____
Σ2031 ____
β 32 ____
β Ser ____
ψ Ser ____
δ Ser ____

Instruments used:

____ on ____
____ on ____
____ on ____
____ on ____

R Ser ____ mag. on ____/____/____

R Ser ____ mag. on ____/____/____

2012 MAY SKY ALMANAC

Solar and Lunar (EDT).

Date	Sunset	Moonrise	Moonset
1	8 : 22	3 : 21p	3 : 21a
5	8 : 26	8 : 17	5 : 37
9	8 : 30	— : —	9 : 25
13	8 : 34	2 : 16a	1 : 50p
17	8 : 38	4 : 03	5 : 58
21	8 : 42	6 : 22	9 : 31
25	8 : 45	9 : 56	— : —
29	8 : 49	2 : 14p	1 : 51a

PLANET WATCH

	Venus	Mars	Saturn
	Sets	*Sets*	*Sets*
	11:54p	4:01a	6:00a
	11:36p	3:47a	5:43a
	11:34p	3:33a	5:27a
	11:20p	3:19a	5:10a
	11:02p	3:05a	4:54a
	10:40p	2:52a	4:38a
	10:15p	2:39a	4:21a
	9:47p	2:26a	4:05a

May 2012

S	M	T	W	T	F	S
		1	2	3	4	5 ○
6	7	8	9	10	11	12 ☾
13	14	15	16	17	18	19
20 ●	21	22	23	24	25	26
27	28 ☽	29	30	31		

Asteroid for May 2012 (18) Melpomene

Date	Rises	RA hr.	RA min	Dec. deg.	Alt.	Azm	Magnitude
1	11 : 56 pm	18 : 40	-	09.9	20º	124º	10.6
7	11 : 32 pm	18 : 41	-	09.5	24	129	10.5
13	11 : 07 pm	18 : 41	-	09.1	28	134	10.3
19	10 : 41 pm	18 : 40	-	08.7	31	140	10.2
25	10 : 14 pm	18 : 38	-	08.5	34	147	10.0
31	9 : 46 pm	18 : 34	-	08.2	47	154	9.9
	EDT	*(at 2:00 AM)*			*(at 2:00 AM)*		

Variable Star of the Month: **R SER** 6.9 - 13.4mag 356 day period

Celestial Highlights

Date	UT hr	
4	12.3	Iris at opposition 10.4m
5	05	Eta Aqruarid meteors
6	03	**FULL MOON**
12	22	**LAST QUARTER MOON**
19	23.9	Juno at opposition
20	24	**NEW MOON**
21	00.3	partial solar eclipse MVO
21	01.5	Annular eclipse W. USA
28	20	**FIRST QUARTER MOON**

LUNAR OCCULTATIONS FOR: MAY 2012

Civil (24hr) date	UT hr	min	sec	date	hr	min	sec	Ph	Moon % illum.	Moon alt	Moon azimuth	Star name	Star Mag.	event PA	dbl./ sep.
0	22 :	09 :	08	1	02 :	09 :	08	D	68+	51º	211º	ZC 1482	6.2	049º	0.10"
1	1 :	42 :	53	1	05 :	42 :	53	D	69+	17	261	19 SEX	5.8	100º	NA
3	23 :	34 :	12	4	03 :	34 :	12	D	94+	38	182	ZC 1845	6.5	028º	29.0"
9	4 :	09 :	50	9	08 :	09 :	50	R	86-	27	175	14 SGR	5.5	276º	NA
14	3 :	29 :	23	14	07 :	29 :	23	R	36-	8	102	ZC 3326	6.4	251º	0.09"
15	3 :	33 :	59	15	07 :	33 :	59	R	26-	4	092	kappa PSC	5.0	308º	163"
15	3 :	51 :	02	15	07 :	51 :	02	R	26-	7	095	ZC 3455	6.3	262º	0.05"
25	22 :	25 :	32	26	02 :	25 :	32	D	22+	20	273	ZC 1234	6.2	136º	0.10"
30	23 :	18 :	06	31	03 :	18 :	06	D	75+	75+	217	ZC 1788	6.8	116º	NA
								Solar eclipse from MVCO area.							
20	20 :	21 :	37	21	00	21	37	Partial Solar Eclipse begins: Sun alt. 2.7º azm 295º Duration 22 minutes.							
20	20 :	42 :	10	21	00	42	10	Sunset. maximum obscuration 55% You'll need clear & flat W-NW horizon							

at MVCO M= misses limb, close pass

D= disappearance. Good occultation event.

d= disappearance, the star's magnitude approaches the observing limits of 200mm objective

R= reappearance. Good occultation event

r= reappearance, the star's magnitude approaches the observing limits of 200mm objective

All disappearances (D) occur on the eastern limb (left side in the sky). Reappearances (R) always occur on the western limb.

Position Angle (PA): tells where along the west limb to watch for a reappearance.

PA is referenced to celestial north: North=0º East=90º South=180º West=270º

Occultations computed using Occult v3.6 (I.O.T.A.)

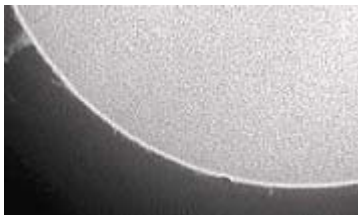
Variable star data from AAVSO. All other data computed with MICA 1800-2050 (Willman-Bell)

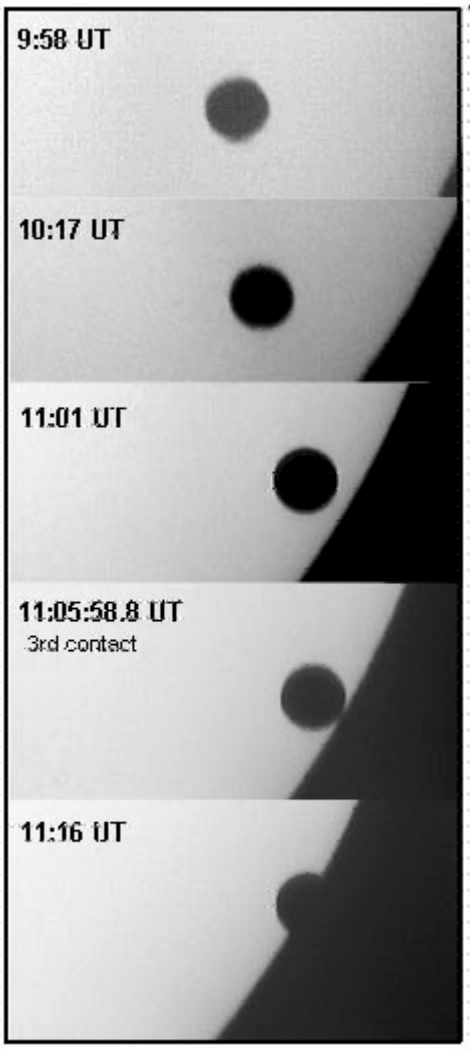
GALLERY…..

TRANSIT IMAGING PROSPECTS: We can look back to the 2004 Venus Transit to get some ideas for imaging. Since the Transit will be low in the sky for us, like in 2004. These images from back then are suitable examples of what you could try this June. The two below were shot from a break-wall in New Jersey, with the Sun rising over the Atlantic Ocean. Far right- your editor (Plante) shot this with a 420mm-800mm telephoto at about 500mm. Data: Exposure time and film info is lost- but no filter of any type was used (even the UV was removed). The middle image was made about 100 yards to the south by New Jersey astronomer Ray Maher. His set-up data is also lost. You can see the subtle differences in the cloud positions and ocean waves. Perfectly timed, identically framed images from two locations 100ft apart might be used to make a stereo image; for nearby objects- the transit will look the same.

Being low on the horizon, the Transit brings many possibilities for imaging it with foreground objects in the frame. It's a tall order to find a suitable object (tree, steeple, telephone poles, rail road track, etc). If you know of such a horizon, investigate this for that "artsy" photo. Above center is Greg Higgin's "Icarus" photo when he caught a bird (hawk?) passing in front of the sun. Keep an eye out for these things. Center image was taken by Isaac Kikawada of Mountain View, California with and H-alpha filter. He shot this 1st contact image from Greece. It's the tiny notch in the solar limb, bottom center. If you have an H-alpha set-up you can also try for this event. You might even catch Venus silhouetted against a prominence- if we get that lucky.

One strategy is to have two sets of imaging optics. In my case, I used an SLR and a zoom at sunrise (above). A rock wall helped to steady the camera. Then I used my C-8 with **white light filter.** I alternated a B&W video cam and the 35mm SLR on the C-8 There was plenty of time to do all the change-ups.





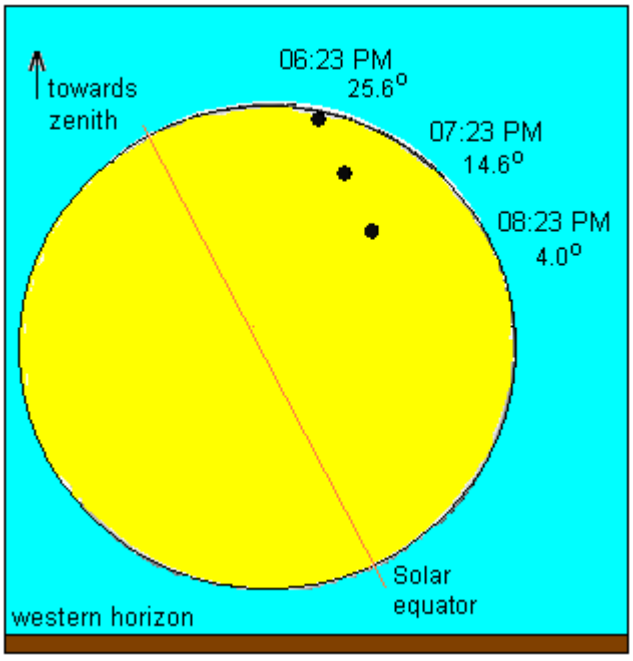
ABOVE: I used my C-8 with an Astrovid StellaCam, B&W video camera at prime focus. Recorded to DV tape, the video was "frame grabbed" at various points. UTC times were inserted and the sequences stacked as shown above. If you look at the third contact frame you can see what appears to be some of the "black drop effect". It might have been missed doing just still imaging. Video recording of the Transit might offer the best record. Frames can be extracted and stacked. But the quality may be less than what a good DSLR can give. As a last resort you could try an eclipse glass filter over a cell phone camera lens. The problem will be keeping things steady as you zoom in. Venus will be small and only through a telescope can you obtain a larger image of fair quality, like above. If you don't have a planetary/webcam to attach to your scope, a last resort would be to aim a camcorder into an eyepiece. Hold it steady or mount it on a tripod. Turn the eyepiece sideways and nudge the tripod up to the eyepiece. Direct camcorder shots will be best when piggybacked on a tracking mount. Practice this before hand.

Remember- you will need a proper solar filter on your scope

or lens at the very start. And well into the transit. As the sun gets down to the horizon (dimming) you might be able to remove the filter from a camcorder or dslr lens. If the haze is thick. Then you should be able to use the camera's "live view" screen to focus and frame. Refrain from looking into an optical finder on your dslr. In the case of a camcorder, you're eye will never see the sun directly- only the LCD screen/electronic viewfinder. This is perfectly safe for your eye. The advantage of electronic media is that you can quickly adjust exposures in real time, and re-do images that are blurred do to vibrations or were out of focus. Relax. There should be over 2 hours of transit time to get at least one good shot. Practice your set-up and exposure times (with filter) many weeks in advance. Take notes and jot down the best test exposure settings you get. Use this as a starting point on Transit Day. Good luck too all! *-P. Plante*

WHAT WILL IT LOOK LIKE?

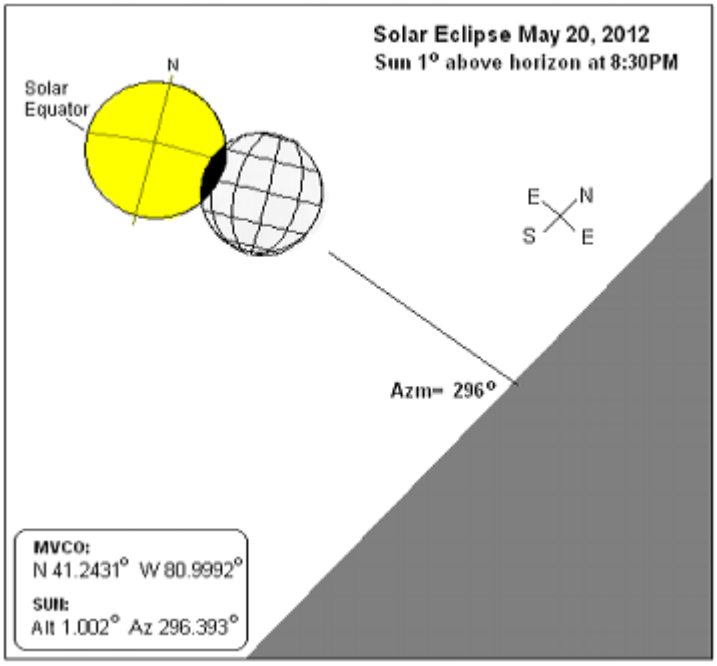
The chart below should give you an idea of how the Transit will be displayed from the MVAS region. It shows the orientation of the solar equator (red line) to the western horizon. This chart is not to scale (horizon to Sun). At top (6:23PM) we have Venus around the time of the black drop effect. The Sun is at 25.6° high. Venus is then shown at one hour intervals. The view at 8:23PM has the Sun about 4° above the horizon. Foreground objects (like trees, buildings, etc) may already be encroaching into the view. Look for sunspots that may be near Venus. They usually form at mid-latitudes, getting closer to the equator as the solar cycle nears maximum. Venus will make first contact just north of the mid-solar latitudes. A close-up image of Venus near a sunspot group would be quite a prize. Can we be so lucky?



Generated with Project Pluto Guide 7

ANNULAR SOLAR ECLIPSE: MAY 20, 2012

On Sunday evening May, 20, 2012 an annular eclipse of the Sun will take place. To see this you'll have to go west. There will be MVAS representatives in Albuquerque for the show. But most MVAS members will still be here in Ohio. A small notch will be bitten into the Sun by the Moon- as seen from these here parts in Ohio. The notch grows as the Sun gets lower. As the graphic below shows, the notch is about 15% and will be directly below; on the lower limb of the Sun. Sorry for the angled horizon- I couldn't get the program to level the horizon. Tilt your head to the left to get a better idea of the circumstances.



At about 8:30PM the Sun will be only one degree high. A clear view of the NW horizon will be needed. The Sun will be at azimuth 296°. This is 18° north of where the Transit takes place. This is a good reason to find your spot for that "artsy" transit photo- at the horizon. Try for a picture of this eclipse. Then decide if you want to do the same with the transit. Use a filtered scope or binocular to catch this visually. Eclipse glasses would be great to try- less equipment to lug outside. Here now, we have two solar events to try for. They will be a challenge. It may be hard to get motivated to observe, but once it's over and you've had success, it won't seem so bad.